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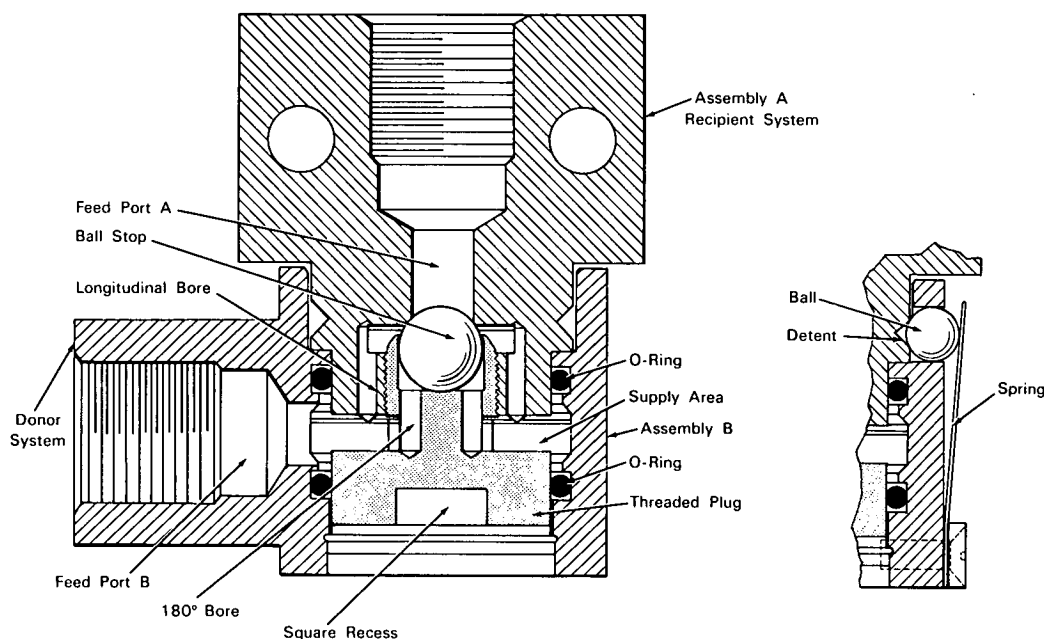
Brief 64-10223

NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Two-Part Valve Acts as Quick Coupling



The problem: Filling large tanks from tanks of lesser capacity involves much handling of valves in both donor and recipient systems with resultant loss of product and expenditure of time.

The solution: A two-part valve in which one part remains integral to the recipient system, acting as a check valve when filling is not taking place, while the other part remains integral to the donor system.

How it's done: The valve part which is integral to the recipient system consists of assembly A having a feed port A, into which a ball stop is pressed by a threaded plug, in which the ball stop is captive. Movement of the plug and ball stop in and out is accomplished by means of a socket wrench drive engaging a

square recess in the base of the threaded plug. When not used in a filling operation, the plug is drawn up so that the ball seals the feed port.

The valve part that is integral to the donor system consists of assembly B having a feed port B which mates with the supply area in the recipient system assembly A when in place. Two O-ring seals entrap all fluid under pressure within the supply area so that pressure is equalized as to the two parts of the valve when assembled. Twelve longitudinal bores are arranged at 30° intervals around the periphery of the movable plug to direct the fluid being transferred from the supply area into the feed port A. Assembly B is retained in a position connected to assembly A by means of two spring and ball devices which mate with

(continued overleaf)

detents on each side of assembly A. Two bores 180° apart within the threaded plug buoy up the ball stop to prevent chattering in the open position.

Notes:

1. This valve was developed for and is being used in liquid fuel operations of the Mariner satellite program.
2. Under test, excellent shutoff was obtained, reducing leakage rates to the order of 1-cc helium per year.
3. Because of its pressure-balanced design, the valve has been successfully opened and closed while handling pressures to 3,000 psig.

4. Inquiries concerning this invention may be directed to:

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Jet Propulsion Laboratory
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Pasadena, California, 91103
Reference: B64-10223

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA Headquarters, Washington, D. C., 20546.

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